

SYNOPSIS OF THE TABANIDÆ OF NEW YORK,
THEIR BIOLOGY AND TAXONOMYBY BERNARD SEGAL
UNIVERSITY OF ROCHESTER*(Concluded from page 78)**Chrysops mitis* O.-S.*(Chrysops mitis* Osten-Sacken, Memoirs Boston Society Natural History, II: 374, 1876.)

Female. Length 9–11 mm., antennæ 2 mm., wings 9–9.5 mm. long, 2.5–3 mm. wide. General body color black. Thorax with two longitudinal grayish stripes on the dorsum. Wings hyaline with a brown picture.

Head:—White and black hair on a ground of yellowish gray pollen covering the face. The callosities are large and lustrous black. Antennal joint 1 cone-shaped, reddish yellow; joint 2 deeply furrowed in the middle, blackish on the outer side, yellowish brown on the inner side; joint 3 black, style thickened at the base. All joints beset with short black hair.

Thorax:—Lustrous black with two longitudinal gray stripes which are interrupted at the middle. Pubescence gray, which on the pleura forms three tufts of long woolly hair, bordered by a row of black hair extending from the roots of the wings to the humeri. Legs generally black; bases of the middle and hind metatarsi reddish yellow.

Wings infuscated at the base, in the costal and subcostal cells and in the proximal halves of the two basal cells. The brown cross-band is undulated in its outer border, which covers the upper halves of the first submarginal and first posterior cells, the entire discal cell, the basal tips of the second and third posterior cells, and basal halves of the fourth and fifth posterior cells. The apex of the first basal cell, and a narrow line along the vein separating the third and fourth posterior cells are brown. The anal cell is faintly infurcated. The apex of the wing, a broad border along the inner margin of the wing, the axillary cell, and the apical halves of the two basal cells are hyaline.

Abdomen:—Lustrous black with grayish delicate hair tending

to form a median row of light pubescence from the scutellum to the apex, and two lateral spots on tergites 1 and 2. Venter black. Sternum 1 bare, all the others clothed with delicate gray hair uniformly distributed.

Male. Similar to female. Ground color a dull black. The infuscation fills the greater part of the two basal cells and the cross-band covers the fourth and fifth posterior cell completely.

Distribution:—New York to Washington; Ontario to Virginia.

Synonyms:—*provocans* Wlk., 1850.

Chrysops niger Macq.

(*Chrysops niger* Macquart, Dipt. Exot. 1: 161, 1838.)

Female. Length 7–9 mm., antennæ 1.5–2 mm., wings 6.5–7.5 mm. long, 2.5–3.5 mm. wide. General color of the body lustrous black. Thorax with two greenish longitudinal stripes. Apex of wing, fifth posterior cell and the second basal cell hyaline.

Head:—Face and front covered with grayish yellow pollen. Facial and cheek callosities shining black, separated from the margin of the eye by a fine line of pollen. Frontal callosity broad, lustrous black. Ocellar area rectangular, with three dark red ocelli on a black background. Antennæ slender, joint 1 reddish yellow, beset with short, thick, black bristles; joint 2 about two-thirds as long as the first, furrowed, and likewise beset with thick, short bristles; basal portion of joint 3 greatly notched, style distinctly annulated, of a dull black color.

Thorax:—Shining black with two longitudinal bands of greenish pubescence. Pleura with olivaceous short hair. Light delicate hair scattered over the entire thorax, but much thicker on the sides than on the dorsum.

Legs black; proximal ends of the front tibiae and all the tarsi light brown.

Wings infuscated on the entire costal margin and first basal cell except at the apical end. The dark cross-band becomes lighter towards the inner margin. The cross-band covers the proximal half of the marginal and the submarginal cells, the first posterior cell, the discal cell, the proximal halves of the second and third posterior cells, and the entire fourth posterior cell. The apex of the wing, the second basal cell, a spot on the apical

end of the first basal and discal cells, the axillary cell and a narrow line on the inner margin of the wing are hyaline.

Abdomen:—Wholly lustrous black bordered by golden yellow delicate hair on the posterior margin of each segment. Venter lustrous black likewise with golden yellow hair, shorter than on the dorsum. No light markings anywhere.

Male similar to female.

Distribution: New York to Minnesota; Ontario to Arkansas and Kansas.

Synonym:—*carbonarius* Walker, 1848.

Chrysops nigribimbo Whitn.

(*Chrysops nigribimbo* Whitney, Canadian Ent., XI: 36, 1879.)

Female. Length 6–7 mm., antennæ 1.5–2 mm., wings 5.5–6 mm. long, 2–2.5 wide. General body color shining black with greenish tone on the dorsum of the thorax. Two longitudinal stripes on the anterior part of the thorax of a light color. No other light pattern anywhere. A very pale dark picture on the hyaline wings.

Head:—Face covered with creamy pollen. The callosities are of a glossy black with a reddish tinge in the central points. Antennæ slender, greatly diverging and curved. Joint 1 light brown, with delicate black hair; joint 2 brown, deeply furrowed, likewise beset with black hair; joint 3 black, lighter on the sinuated basal portion. Style slender, distinctly annulated and curved on the tips. Frontal callosity nearly rectangular, separated from the eyes by a narrow line of grayish green pollen. Ocellar area black with three reddish ocelli. Posterior of head dark with short yellow hair.

Thorax:—The two light longitudinal stripes are vaguely outlined on the anterior of the black thorax, but do not reach the posterior end. Pubescence on the sides of the thorax light yellow. Legs light brown, of a darker tone on the front tibia, the base of middle and hind femora and tarsi.

Wings infuscated at the base, on the first basal and marginal cells. The cross-band is indicated over the proximal half of the first submarginal, the entire discal cells and vanishes gradually

at the middle of the fourth posterior cell. In some specimens the cross-band is hardly visible.

Male unknown.

Distribution:—New York, Massachusetts, Connecticut, New Hampshire to North Carolina.

Synonym:—*nigrilimbo* Kertész, 1900.

Chrysops sordidus O.-S.

(*Chrysops sordidus* Osten-Sacken. Memoirs Boston Society Natural History, II: 375, 1876.)

Female. Length 10.5–11 mm., antennæ 2–2.3 mm., wings, 9.5–10 mm. long, 3–3.5 mm. wide. General body color black, thorax with two broad median stripes of a bluish-green tone. Abdomen with light median triangles, lateral spots, and posterior margins on the tergites. Wings grayish hyaline with a light brown picture.

Head: Face covered with white pollen. Facial and cheek callosities lustrous black. Antennal joint 1 about three times as long as wide, yellowish brown; joint 2 dark brown with yellowish blotches on the inner side, deeply furrowed; both joints beset with strong black bristles. Joint 3 longer than 1 and 2 together, style rather short and thick, distinctly annulated. Front callosity wide and lustrous black. Ocellar dark area vaguely outlined, grayish yellow hair around and between the three shining brown ocelli. Posterior of head black with short gray hair.

Thorax:—Two wide bluish-green stripes which do not reach beyond the middle of the dorsum, are distinct on the dull black background. A very faint bluish black, narrow median line separates the wider stripes. The whole dorsum clothed with yellowish hair, growing longer toward the scutellum. On the pleura they form three dense tufts of long hair; one at the junction of head to the thorax, one between the front and middle coxæ, and one around the middle coxæ, with a row of black, long hair extending from the roots of the wing to the humeri. Legs dull black with lighter spots on the tips of the middle and hind tibiæ and metatarsi. Pubescence of legs short, black, with longer yellowish hair on the femora.

Wings infuscated on the costal and subcostal cells and at the

base. First basal infurcated on the proximal two-thirds and the very apex; second basal less densely infurcated, and over a smaller area than the first basal cell. The light brown cross-band is vague in outline and loses its intensity as it approaches the inner margin of the wing. The outer border covers most of the marginal cell, the proximal halves of the first submarginal and first posterior cells, the entire discal cell, the base of the second posterior cell and obliquely extends over the basal half of the third posterior cell. The fourth and fifth posterior cells are lightly infuscated by the faint outer border of the cross-band, gradually fading toward the margin of the wing. There is also a narrow line of brown along the vein separating the anal and the fifth posterior cells. Scattered dots of brown along the costa mark the continuation of the infurcation of the marginal cell into the apical region of the wing. The hyaline areas are grayish and lusterless.

Abdomen:—Glossy black background with a black pubescence: tergite 1 with a yellow spot on either side; 2 with a light posterior border which expands anteriorly to form a median triangle and lateral spots; 3 to 6 with light posterior borders, tending to form median spots of value outline. Venter yellowish brown with light posterior border, clothed with gray silky hair.

Male unknown.

Distribution:—New Brunswick to New York.

Group IV. *Virgulatus*

The group is characterized by the club-shaped thickening of the first or first and second antennal joints. The only Eastern representative of this group, *brunneus* Hine, is easily recognized by the peculiar cinnamon brown coloration of the abdomen.

Chrysops brunneus Hine

(*Chrysops brunneus*, Hine, Tabanidæ of Ohio, Ohio State Academy of Science. Special Paper no. 5, 1903.)

Length 8.5 mm., antennæ 2.5–3.5 mm., wings: 8–10 mm. long, 3–4 mm. wide.

Female. General color of abdomen cinnamon brown. Thorax dark brown with grayish longitudinal stripes. Wings blend with

the general tone of the body, the brown picture being vaguely outlined on a smoky background interrupted by sub-hyaline spots.

Head:—Face covered with gray pollen. All callosities of a shining amber color. Ocellar area dark brown, bearing three black ocelli. Front covered with reddish pollen and dotted by short hair. Antennal joints 1–2 dark reddish-brown, thickened. Joint 3 reddish-brown at base, the rest and the terminal style black.

Thorax:—The dorsum is lustrous brown with two indistinct grayish longitudinal stripes separated by a narrow median brown line. Sides and pleura light brown covered with yellow hair. Scutellum reddish brown. Legs uniformly brownish yellow.

Wings brown on the anterior margin and over $\frac{2}{3}$ of the first and $\frac{1}{2}$ of the second basal cell. The cross-band touches upon the apex of the basal cells and fills the entire discal cell. The posterior border of the cross-band extends over the proximal half of the first submarginal and first posterior marginal cell, covers the proximal $\frac{1}{4}$ of the second and third posterior marginal cells, and fills completely the fourth posterior marginal cell. A slight band of infuscation borders the vein separating the fifth posterior marginal cell and the anal cell. The apical spot covers the entire apical angle of the wing and is separated from the cross-band by a narrow subhyaline crescent.

Abdomen:—The cinnamon-brown coloration is marked by light triangular spots on the posterior margins of tergites 2–4, and by irregular, oblique lateral streaks on tergites 3–7. Venter darkens gradually toward the posterior sternites, and is marked by light median and lateral spots. Pubescence dense silky yellow.

Male similar to female. The infuscation of the cross-band invades most of the fifth posterior marginal cell.

Distribution: Ontario to Georgia; New York to Arkansas.

Group V. *Callidus*

I. Apical spot of wing confined to a narrow marginal band, not invading the first submarginal cell.

A. Cross-band of wing filling only part of the discal cell, leaving at least the proximal $\frac{1}{3}$ hyaline.

B. Tergites 1 and 2 of abdomen yellow with a median black spot on 1, and a black horse-shoe figure on 2.

delicatulus O.-S.

- BB. Abdomen dark-brown with a narrow, continuous yellow mid-dorsal stripe *wiedemanni* Kroker
- AA. Cross-band of wing filling the entire discal cell, or only a small area at the very base of the cell is light.
- B. Abdomen olivaceous with light, median triangles and lateral spots on tergites 1 and 2 *brimley* Hine
- BB. Abdomen yellow with a black pattern.
- C. Tergite 2 with a black median horse-shoe figure and two small triangular spots on either side. Fourth posterior marginal cell not infuscated on its distal $\frac{1}{2}$; cross-band not reaching the posterior margin of the wing. *moerens* Wlk.
- CC. Tergite 2 of abdomen without black spots on either side of the median horse-shoe figure. Fourth posterior marginal cell completely infuscated *callidus* O.-S.
- II. Apical spot of wing invading the first submarginal cell.
- A. Apical spot linear in outline; only slightly broader than the brown costal margin above the stigma.
- B. Abdomen mostly dark. Tergite 2 with a yellow median triangle and lateral spots. Fourth posterior cell of wing covered by the brown of the cross-band over the proximal $\frac{3}{4}$ only; cross-band not reaching the posterior margin of wing *sackeni* Hine
- BB. Abdomen mostly yellow or pale brown.
- C. Abdominal tergite 1 with a brown circular spot, 2 with an inverted heart-shaped figure *pudicus* O.-S.
- CC. Abdominal tergite 1 without dark spot, 2 with faint brown horse-shoe figure *flavidus* Wied.
- AA. Apical spot of wing large, broader than the brown costal margin.
- B. Apical spot confluent with the cross-band; hyaline triangle not extending across the entire first submarginal cell.
- C. Abdominal tergite 2 with a black horse-shoe shaped figure enclosing a yellow triangle on the posterior border *dimmocki* Hine
- CC. Abdominal tergites 2-4 each with four black spots. *montanus* O.-S.
- BB. Cross-band of wing separated from the apical spot; apex of hyaline triangle extending across the second longitudinal vein.
- C. Abdomen mostly yellow with black markings; tergite two with two narrow vertical bars, converging anteriorly.
- D. Abdominal tergite 1 with a brown spot just beneath the scutellum. Scutellum brown. *geminatus* Wied.
- DD. Abdominal tergite 1 with two circular brown spots. Scutellum greenish *lateralis* Wied.

Chrysops brimleyi Hine

(*Chrysops brimleyi* Hine. Canadian Entomologist, XXXVI: 55, 1904.)

Length 7-7.5 mm., antennæ 2-2.3 mm., wings 6.5-7 mm. long, 2.3-2.5 mm. wide.

Female. General body color olive with a gray pubescence. Thorax striped, abdomen with light patterns. Wings hyaline with brown picture.

Head:—Face covered with creamy pollen. Facial callosities shining yellow. Cheeks black. Frontal callosity black, rounded. Ocellar area black with three yellowish ocelli. Antennal joints 1 and 2 light brown with short black bristles, longer on the furrowed second joint. Joint 3 with a light base, the rest and the annulated terminal style black.

Thorax:—A fine median brown line separates two gray longitudinal stripes which do not quite reach the middle of the dark olive dorsum. Pleura greenish with long gray hair. Legs black, basal parts of the tibiæ, and middle and hind tarsi light brown, all parts with short black hair.

Wings brown at the base, along the costal margin, and on the apical angle. The cross-band touches on the apex of the first basal cell, fills completely the discal cell except the very basal tip, and with its posterior border extends from the stigma to fourth posterior marginal cell. The hyaline triangle separates the narrow apical spot from the cross-band. The entire fifth posterior marginal cell, the anal cell, the axillary cell and most of the basal cells hyaline.

Abdomen:—Tergite 1 lustrous olive with light posterior margins expanding into a median triangle and lateral spots. Tergite 2 with a light posterior margin and two circular spots in the center. The other tergites olive brown with light posterior margins. Hair delicate black on the dark areas, white on the light parts. Venter brown with white hair.

Male unknown.

Distribution.—New York to North Carolina.

Chrysops callidus O.-S.

(*Chrysops callidus* Osten-Sacken, Memoirs Boston Society Natural History II: 379, 1876.)

Length 7–9 mm., antennæ 1.5–2.5 mm., wings 7.5–8.5 mm. long, 2.5–3 mm. wide.

Female. Bright yellow with outstanding black patterns on the abdomen. Brown longitudinal stripes on the greenish thorax. Wings hyaline with brown picture distinctly outlined.

Head:—Face covered with yellow pollen. Facial callosities and cheeks glossy yellow. Frontal callosity black, connected with the black ocellar area by a narrow black line. Space between and around the three brown ocelli covered with gray pollen and long yellow hair. Antennal joint 1–2 light yellow on the inner sides, dark on the outer sides, with strong black bristles, joint 3 yellow on the basal portion, the rest and annulated terminal style black.

Thorax:—The narrow median brown line separates two greenish-gray longitudinal stripes. These are bordered by brown longitudinal stripes, followed by light green lateral stripes. Pleura green clothed with long yellow hair. Legs black, front femora, middle and hind tibia and the basal parts of all metatarsi yellow. Hair on the dark parts black, on the light parts reddish-yellow.

Wings brown at the base and on the very tips of the two basal cells. The costal margin to the apical angle presents a broad brown border. Cross-band touches with its anterior border the apices of the two basal cells and fills the entire discal cell. The posterior border extends over the proximal halves of the first submarginal cell and first posterior marginal cell, covers the bases of the second and third posterior marginal cells, and nearly fills the entire fourth posterior marginal cell. Base of fifth posterior marginal cell and along the vein separating it from the anal cell brown. The hyaline triangle reaches from the second longitudinal vein to the inner margin of the wing. The anal, the axillary, and the middle part of the two basal cells hyaline.

Abdomen:—Tergites 1–2 mostly yellow, with a black quadrangular spot on the first and a horse-shoe figure on the second. Neither of these figures reaches the posterior margin of the seg-

ment. The light posterior margin of the second tergite expands into a yellow median triangle. Tergites 3-4 with the yellow darker in tone, and the black diffused over a larger area. The median black figures encompass yellow median triangles which are expansions of the light posterior borders. The black is more prominent in the remaining tergites occupying the anterior halves of the segments. Venter yellow on sternites 1-2, with narrow vertical black lines on either side of the second sternite. Sternites 3-4 yellow with black median spots and lateral vertical lines. The other sternites black on the anterior halves, and yellow on the posterior borders. Hair on the dark areas black, on the yellow sides and triangles of the dorsum and the entire venter light yellow.

Male. Similar to female. Basal cells of wings more infurcated on the proximal end. The black quadrangle on the abdomen occupying most of the first tergite. The black also dominating on the last 3 segments.

Distribution:—Ontario to Florida; New York to Kansas.

Chrysops delicatulus O.-S.

(*Chrysops delicatulus* Osten-Sacken, Memoirs Boston Society Natural History, II: 380, 1876.)

Length 6.5-7 mm., antennæ 1.5-2 mm., wings 6.3-6.8 mm., long 2.2-2.5 mm. wide.

Female. Thorax with longitudinal gray and brown stripes. Abdomen chocolate brown with yellow markings. Wings glossy hyaline with a brown picture.

Head:—Face covered with gray pollen and white silky hair. Facial callosities and cheeks amber colored. Frontal callosity shining black. Ocellar area black with three reddish brown ocelli. Vertex with yellowish hair. Antennal joint 1 yellow with a dark tip, 2 bluish-black, furrowed, clothed with thick black bristles. Joint 3 and annulated terminal style black.

Thorax:—The narrow median reddish-brown line is bordered on either side by a bluish-gray longitudinal stripe. Next follow broad chocolate-brown bands which converge toward the scutellum. The sides are bluish-gray. The dorsum is clothed with gray hair which is longer and thicker on the sides. Legs dark

brown, bases of all tibiae and the middle and hind metatarsi yellow.

Wings brown at the base and tips of the two basal cells, and along the costal margin. Cross-band touches with its anterior border on the apex of the first basal cell, the posterior border extends almost vertically from the stigma to the inner margin of the wing. It covers the proximal halves of the first submarginal, first posterior marginal, the bases of the second and third posterior marginal, about three-fourths of the discal, and the entire fourth posterior marginal cells. A narrow border along the vein separating the fifth posterior marginal and the anal cells in light brown. The apex of the hyaline triangle interrupts the brown costal margin at the stigma. Most of the basal cells, the basal one-quarter of the discal cell, the anal, axillary, and the fifth posterior marginal cells are hyaline.

Abdomen:—Tergite 1 with a chocolate brown, narrow anterior margin and a quadrilateral black bar which broadens toward the posterior margin, but does not quite reach it. The posterior margin and the sides are yellow. Tergite 2 with a brown horse-shoe figure enclosing a yellow triangle. The posterior margin and the sides are yellow. Tergites 3-4 brown with light posterior margins and small yellow median triangles and sides. The other tergites black with broad light posterior margins. Venter yellow on sternites 1-2, sternite 3 with a brown base and middle spot. The other sternites brown with broad gray posterior margins. Pubescence everywhere delicate gray.

Male unknown.

Distribution:—Maine, Massachusetts, New York, New Jersey.

Chrysops dimmocki, Hine

(*Chrysops dimmocki*, Hine, Ohio Naturalist, VI: 393, 1905.)

Length 8-8.5 mm., antennæ 2-2.3 mm., wings 7.5-8 mm. long, 2.3-2.5 mm. wide.

Female. Thorax with alternating green and brown stripes. Abdomen with a middorsal row of yellow triangular spots enclosed by semicircular black figures. Wings hyaline with a brown picture.

Head:—Face covered with golden yellow pollen and pale yellow hair. Facial callosities and cheeks reddish-yellow. Frontal

callosity amber-colored. Ocellar area black, bearing three brown ocelli. Antennal joints 1-2 yellow beset with short black bristles. Base of joint 3 reddish-yellow, the rest and the terminal style black. Front and vertex with gray pollen and short whitish hair.

Thorax:—The middorsal brown narrow line separates the two wide longitudinal green stripes. These are followed by lustrous brown stripes of the same width. Sides green with a bluish tinge on the anterior part. Pleura yellow, with a brown stripe extending from base of thorax to base of wing. Pubescence pale yellow. Legs reddish-yellow. Tips of all tibiae, the front tarsi, and the tips of the middle and hind tarsi dark. Scutellum green with yellow apex.

Wings brown on the anterior margin and at the base, including about one-third of the first and basal cells. The apical spot covers about three-fourths of the cell enclosed by the branches of the third longitudinal vein. The cross-band touches upon the apex of the first basal cell and leaves a hyaline spot in the basal part of the discal cell. The posterior border of the cross-band extends irregularly toward the fourth posterior marginal cell which it fills completely. Second basal cell, except for a brown band at base, fifth posterior, anal and axillary cells hyaline. Hyaline triangle reaches with its vertex across the third longitudinal vein into the middle of the first sub-marginal cell.

Abdomen:—Tergite 1 yellow with a quadrilateral brown figure, just beneath the scutellum, reaching down three-fourths of the segment. Tergite 2 yellow, with a black horseshoe-shaped figure enclosing a yellow triangle. The black figure reaches neither of the borders of the tergite. Anterior three-fourths of tergites 3-5 black, with yellow sides and posterior borders which expand into triangular figures cutting into the black. The yellow on the sides also expands anteriorly and is continuous with the yellow of the preceding segments. Tergites 6-7 black with light posterior borders. Venter reddish-yellow with brown spots on sternites 4-5. Sternites 6-7 brown with light posterior borders. Pubescence yellow in the light areas, otherwise black.

Male easily associated with the female of this species by the pattern of the abdomen. The second basal cell is infuscated

over the proximal half. The brown of the cross-band invades the fifth posterior marginal cell.

Distribution:—Massachusetts to Georgia: Long Island to Ohio.

Chrysops flavidus Wied.

(*Chrysops flavidus*, Wiedemann—*Diptera exotica* I: 105, 1821.)

Length 8.5–9 mm., antennæ 2–2.3 mm., wings 8–8.5 mm. long, 2.5–3 mm. wide.

Female. Abdomen yellow with a faint brown pattern. Thorax with alternating brown and gray longitudinal stripes. Wings grayish hyaline with a pale brown picture.

Head:—Face covered with yellow pollen and white long hair. Facial callosities honey yellow. Frontal callosity semicircular, yellow. Pollen above the callosity to the posterior of the head white. Ocellar area brownish with three large dark brown ocelli. Front and vertex with long yellow hair. Antennal joints 1 and 2 yellow with strong black bristles; joint 3 reddish at the base, the rest of the joint and the annulated terminal style black.

Thorax:—A narrow median brown line, running the entire length of the dorsum, separates two broad grayish stripes. The latter are bordered by yellow lateral stripes. Pleura grayish-yellow with long gray hair. Legs reddish-yellow, the tips of the tibiæ and all the tarsi dark.

Wings infuscated at the base, over about one-half of the first basal, and the very tip of the second basal cell. The entire costal margin to the apical angle presents a broad brown border. The cross-band touches upon the apex of the first basal cell with its anterior border, fills the entire discal cell, and covers the apex of the anal cell. The posterior border extends over the proximal halves of the first submarginal and first posterior marginal cells, covers the base of the second posterior and obliquely about one-half of the third posterior, and completely the fourth posterior marginal cells. There is a narrow brown band along the vein separating the fifth posterior marginal cell and the anal cell. The hyaline triangle extends from the middle of the first submarginal cell to the inner margin of the wing.

Abdomen:—Tergite 1 pale yellow; 2 similar in color on the sides, with a faint outline of a brown horse-shoe pattern in the

middle. Tergite 3 darker in tone with two circular brown spots in the center. The other tergites with irregular dark markings on the anterior halves and grayish-yellow posterior margins. Venter yellow with dark markings on sternites 4-7.

Male. Similar to female. Stripes on thorax less distinct, basal cells of wings more infurcated than in the female.

Distribution:—Ontario to Florida; Long Island to Kansas.

Synonyms:—*canifrons*, Walker, 1848.

pallidus, Bellardi, 1859.

Chrysops geminatus Wied.

(*Chrysops geminatus*, Wiedemann, Aussereuropaische Insecten, I: 205, 1828.)

Length 6-7.5 mm., antennæ 1.8-2 mm., wings 6-7 mm. long, 2-2.5 mm. wide.

Female. Thorax with alternating dorsal greenish and brown stripes of equal width. Abdomen yellow dominating on the first two tergites, the rest black with a narrow median yellow longitudinal stripe. Wings hyaline with brown picture in which the apical spot is separated from the cross-band.

Head:—Face covered with yellow pollen and silky whitish hair. Facial callosities yellowish-brown, with darker outer borders. Frontal callosity dull black. Ocellar area black with three brown ocelli. Front and vertex covered with grayish-green pollen and gray hair. Antennal joints 1-2 reddish-yellow beset with short black bristles. Joint three reddish-yellow on basal part, the rest and the annulated terminal style brown.

Thorax:—The brown median line separates two greenish stripes which in turn are bordered by brown stripes distinctly reaching the scutellum. Sides yellow, separated from the bright yellowt pleura by a brown stripe from base of thorax to base of wing. Pubescence short, yellow. Legs yellow with dark terminal parts of the front and hind tibia, and tips of all tarsi. Scutellum brown. Wings brown on the tip of the first basal cell and along the costal margin. Apical spots covers the second submarginal cell except at its very base. Cross-band touches upon the tip of the first basal cell and fills the discal cell, but leaves a light triangular spot at basal tip. The posterior border of the cross-

band runs convexly from the stigma to the posterior margin of the wing leaving a narrow light band on the border of the fourth posterior marginal cell. The hyaline triangle reaches the anterior margin, thus separating the apical spot from the cross-band. The vein between the fifth posterior and the anal cell is infuscated on either side. The fifth posterior, the anal, axillary and the second basal cells, are hyaline.

Abdomen:—Tergite 1 yellow with a brown quadrangular spot just beneath the scutellum. Tergite 2 yellow with two oblique brown lines, often contiguous on the anterior ends giving the appearance of a horseshoe figure. Tergites 3–4 each with two square brown blocks, separated on the middorsal line by a narrow yellow stripe and bordered by yellow posterior margins and lateral lines. Tergites 5–7 brown with light posterior margins. Venter yellow with median brown square spots on sternites 4–5. The terminal sternites brown with light posterior borders. Pubescence short, yellow.

Male. Similar to female. Infuscation at the base of the wing invades the basal parts of both basal cells. More hairy than the female on the thorax.

Distribution:—Ontario to Georgia; Long Island to Ohio.

Synonym:—*Chrysops fallax*, Osten-Sacken, 1876.

Chrysops lateralis Wied.

(*Chrysops lateralis* Wiedemann, Aussereuropäische Zweiflügelige Insecten, I: 209, 1828.)

Length 8–9 mm., antennæ, 1.8–2 mm., wings 7.5–8 mm., long, 2–2.5 mm. wide.

Female. Thorax greenish with brown longitudinal stripes. Abdomen reddish-yellow with a black pattern. Wings clear hyaline with a pale brown picture.

Head:—Face covered with golden yellow pollen, and yellow silky hair. Facial callosities yellow. Cheeks lustrous black. Frontal callosity black, rounded above. Ocellar area black, obscured by the gray pollen, bearing three black ocelli. Antennal joint 1 yellow, joint 2 dark, furrowed, beset with black bristles. Joint 3 and the curved terminal style black.

Thorax:—The narrow, brown, median line is bordered on either

side by a wide green stripe, which in turn are followed by brown stripes, narrow at the anterior and widening toward the scutellum. Sides greenish, separated from the yellow pleura by a narrow brown stripe. Dorsum clothed with fine yellow hair, pleura with long reddish-yellow hair. Scutellum green. Legs yellow, basal half of the hind femora and all tarsi black.

Wings brown at base on tip of first basal cell, and costal margin which broadens into the apical spot beyond the stigma. Cross-band touches upon the apex of first cell with its anterior border, fills the discal cell and is limited by the veins of the fourth posterior marginal cell. The posterior border extends roundly from the stigma to the inner margin of the wing, covering the proximal halves of the marginal, first submarginal, about one-fourth of second, one-third of third, and the entire fourth posterior marginal cell, except for a narrow, clear margin. The apical triangle, the fifth posterior marginal cell, the anal, axillary, and second basal cell, hyaline.

Abdomen:—Tergite 1 reddish-yellow with two small circular spots. Tergite 2 yellow with two vertical black bars. Tergites 3-4 each with four vertical black bars, which in tergite 5 are fused to form two black masses separated in the middle by a wedge-like expansion of the yellow posterior margin. On tergites 6-7 the black occupies most of the anterior parts of the segment. Venter yellow, with median black spots on sternites 3-4, and black anterior margins on sternites 5-7. Pubescence golden yellow.

Male. Similar to female. Brown picture of wing darker, and black pattern on abdomen more pronounced than in the female.

Distribution: Quebec to Pennsylvania, New York to Kansas.

Synonyms:—*hilaris*, Osten-Sacken, 1876.

Chrysops moerens Wlk.

(*Chrysops moerens* Walker, List of Diptera British Museum I: 201, 1848.)

Length 9-9.5 mm., antennæ 2.2-2.5 mm., wings 8.5-9 mm. long, 2.5-3 mm. wide.

Female. Thorax bluish with longitudinal black stripes. Abdomen brown with yellowish patterns. Wings clearly hyaline with an outstanding brown picture.

Head:—Face covered with gray pollen. Facial callosities and cheeks reddish-brown. Frontal callosity semicircular, black. Ocellar area pollinose, ocelli reddish. Oral margin with silky white long hair. Vertex with black hair. Antennal joint 1 yellow at the base and on the inner side, brown on the outer side; joint 2 similarly colored, furrowed; both joints beset with short black bristles, joint 3 reddish at the base, the rest, and the annulated style black.

Thorax:—The dorsum presents a pattern of alternating black and lighter longitudinal stripes. On the mid-dorsum is a narrow black line, distinct in its entire length from the anterior margin of the thorax to the scutellum. On either side of this line are wide bluish-white bands which grow indistinct as they approach the scutellum. Next to these are black stripes which merge with the black posterior border of the thorax. Humen with pale yellow patches. Pleura reddish brown with tufts of long white hair bordered by a row of strong black hair from the base of the thorax to the base of the wing. Scutellum bluish with long yellow hair. Legs black, basal half of the front tibia, and the middle and hind metatarsi reddish-yellow. Pubescence short, black.

Wings infuscated at the base and on the bases of the two basal cells. The costal cell is slightly brown along the longitudinal vein. The cross-band covers the proximal halves of the marginal, first submarginal and first posterior cells; touches upon the apices of the two basal cells, fills completely the discal cell, and extends roundly over the basal parts of the second, third and fourth posterior cells. The fifth is infurcated only along the veins. The apex of the wing, anal and axillary cells, and the middle portions of the basal cells, clearly hyaline.

Abdomen:—Tergite 1 brown with a yellow posterior border which expands to form two lateral blocks. Tergite 2 with a yellow median triangle and two lateral spots just beneath those of the first tergite and sometimes fusing with them. The yellow lateral spots have the appearance of horse-shoes, due to small, lateral, black, triangular spots on the posterior border of the tergite. Tergites 3-4 with a wide posterior light border and a median triangular spot. Tergites 5-6 dark brown with narrow posterior light borders which in the middle tend to enlarge into

triangular spots. The abdomen is clothed with black hair on the brown parts, and longer white hair on the light areas. Venter dark brown with yellow lateral spots on sternites 1-3. All sternites with light posterior borders and clothed with silky white hair.

Male. Smaller and darker than the female. Abdomen dull black with the characteristic yellow posterior borders, lateral spots and median triangles.

Distribution: New York to Kansas; Ontario to Pennsylvania.

Synonyms: *aestuans* van der Wulp, 1867.

Chrysops sackeni Hine

(*Chrysops sackeni*, Hine, Ohio State Academy of Science, special paper No. 5: 42, 1903.)

Length 8-10 mm., antennæ 2 mm., wings 7.5-9 mm. long, 2.5-3 mm. wide.

Female. General color of abdomen reddish-yellow with a brown pattern. Thorax greenish with brown longitudinal stripes. Wings glossy hyaline with brown picture distinctly outlined.

Head:—Face covered with pale yellow pollen and whitish-yellow hair. Facial callosity and cheeks yellow. Frontal callosity yellow on the convex disk yellow, dark brown on the margin. Front above the callosity covered with gray pollen. Ocellar area black, bearing three black ocelli. Antennal joints 1-2 yellow, beset with strong black bristles, joint 3 yellow at base, the rest and the annulated terminal style black.

Thorax:—The median, narrow, brown line separates two wide greenish longitudinal stripes. These are bordered by brown stripes which distinctly reach the scutellum. Sides yellow, separated from the pale yellow pleura by a narrow brown line. Dorsum clothed with yellow hair mixed with delicate short black hair. Legs yellow, with brown bases of front and middle, and most of the hind femora, and all tarsi.

Wings infuscated at base, and the basal parts of the two basal cells, and on the costal margin. The cross-band touches on the apex of the first basal, fills completely the discal cell, extends with its posterior border over the proximal halves of the first sub-

marginal and first posterior marginal cells, covers the bases of the second and third posterior marginal, and about three-quarters of the fourth posterior marginal. The first posterior marginal is brown at the base and along the vein separating it from the anal cell which is also slightly clouded. The brown of the costal margin widens beyond the stigma into the apical spot covering the marginal cell and the apex of the wing including about one-half of the second sub-marginal cell.

Abdomen:—Tergite 1 yellow at sides with a brown quadrilateral figure just beneath the scutellum, the sides converging toward the posterior margin. Tergite 2 with yellow sides and a large median horse-shoe figure which encloses a light triangle. Tergites 3-5 with yellow sides, light posterior margins and median triangles. The black on the anterior margin of the tergites is in the form of two semicircular spots, fused at their bases. Tergites 6-7 black on the anterior two-thirds, yellow on the posterior one-third. Venter yellow with vertical black lines on either side of sternites 2-3, and median spots on sternites 3-5. Sternites 6-7 black with yellow posterior margins. Abdomen clothed with yellow hair mixed with silky black on the dark areas.

Male. Similar to female. Basal cells of wings more infuscated, and brown predominant in the abdominal pattern.

Distribution:—New York to Minnesota, Ontario to Florida.

Group VI. *Vittatus*

- I. Abdomen brown or grayish-black, without any bright markings.
Small species.
- A. Abdomen grayish-black with dull brown spots. Hyaline triangle of wing extending across the 2nd longitudinal vein.
fuliginosus Wied.
- AA. Pure glossy brown species. Hyaline triangle of wing not reaching across the 2nd longitudinal vein*parvulus* Daecke.
- II. Abdomen always bicolored, shades of black and yellow in varying degrees and proportions.
- A. Abdomen mostly dark, with pale yellow spots and stripes.
- B. Tergites 1-3 of abdomen with a fine middorsal yellow stripe and common lateral spots*lugens* Wied.
- C. Middorsal line distinct over tergites 1-5.
obsoletus Wied.
- AA. Abdomen mostly light, with black or brown spots and stripes.
- B. Hyaline triangle of the wing, between the cross-band and

the apical spot, occupying most of the first three posterior marginal cells.

- C. Black on the abdomen in the form of two longitudinal stripes, confluent on the first tergite, with a row of yellow triangular spots between on the following tergites*indus* O. S.
- CC. Black on the abdomen in the form of median spots on tergites 1-2, ad transverse bars on the following tergites*frigidus* O. S.
- D. Abdomen bright yellow with narrow vertical black stripes on each tergite.
- E. Thorax with greenish-yellow longitudinal stripes on dorsum. Fifth posterior marginal cell of wing invaded by the brown of the cross-band*vittatus* Wied.
- EE. Thorax with dull green longitudinal stripes on the dorsum. Fifth posterior marginal cell hyaline*striatus* O. S.
- BB. Apical spot of wing covering the entire apical angle, hyaline triangle confined to the distal $\frac{1}{3}$ of the second and third posterior marginal cells only.
- C. Abdominal pattern consists of two dark-brown longitudinal stripes bordering on a median yellow stripe.
univittatus Macq.
- CC. Abdominal tergite 1 bright yellow, 2-4 each with four vertical narrow black stripes*mæchus* O. S.

Chrysops indus, O.-S.

(*Chrysops indus*, Osten-Sacken, Memoirs of the Boston Society of Natural History, II, 383, 1875.)

Length 7.5-9.5 mm., antennæ 2.25 mm., wings 7.5-9 mm. long, 2.5-3 mm. wide.

Female. Thorax greenish-yellow with brown longitudinal stripes. Abdomen black with yellow lateral spots and a mid-dorsal series of triangles.

Head:—Face covered with yellow pollen and gray hair. Facial callosities and cheeks reddish-yellow with a greenish lustre on the sides. Frontal callosity black. Ocellar area black bearing three reddish-brown ocelli. Front above the callosity and vertex clothed with greenish-gray pollen and delicate, scattered, yellow hair. Antennæ slender; joint 1 yellow, 2 brown on the outer surface, both beset with small black bristles. Joint 3 reddish at base, the remainder and the terminal style black.

Thorax :—The narrow median brown stripe separates two broad greenish-yellow stripes, which are in turn bordered by brown longitudinal stripes. Sides yellow. Pleura yellow, separated from the dorsum by a brown line running from humeri to the base of the wing. Dorsum clothed with delicate black hair. Sides and pleurae with yellow hair. Scutellum brown with a greenish lustre. Legs reddish-yellow; tips of front tibiae and tarsi, and ends of the middle and hind tarsi, black.

Wings with a brown anterior margin extending over the first basal cell, and continuous with the apical spot covering the marginal, first submarginal and about three-fourths of the second submarginal cells. Cross-band fills the proximal half of the first posterior marginal cell, about one-third of the second and one-half of the third, and the entire fourth posterior marginal cell. The discal cell is brown except for a hyaline space at the base, the 5th posterior marginal cell is clouded except at the base and margin, and the anal cell is infuscated on the apical one-third. The hyaline triangle is grayish and reaches just across the branching of the third longitudinal vein. A small apical spot on the first basal cell, the second basal cell, a marginal band on the fourth posterior, a similar band on both ends of the fifth posterior, the proximal two-thirds of the anal and the axillary cells, are hyaline.

Abdomen :—Tergite 1 yellow with a median square black spot, the width of the scutellum; tergite 2 yellow with a black figure of the same width, and contiguous with that of the preceding segment, enclosing a yellow triangle on the posterior margin. Tergites 3–4 each with two broad black spots which do not reach the posterior margins. The space between the black spots forms a yellow median stripe continuous with the yellow triangle or tergite 2, and faintly tapers into the black tergite 5. Tergites 6–7 black with light posterior margins. Venter reddish-yellow with narrow vertical black lines on the sides of sternites 2–3. The others are black with light posterior margins.

Male. Similar to female but darker in color, and the second basal cell as well as the entire anal cell infuscated.

Distribution :—Quebec and Ontario to New York and Iowa.

Chrysops lugens, Wed.

(*Chrysops lugens*, Wiedemann, *Diptera exotica*, I: 109, 1821.)

Length 7.5–8 mm., antennæ 2–2.5 mm., wings 7–7.5 mm. long, 2–2.3 mm. wide.

Female. General appearance dull brown. Thorax gray above, brown on sides. Abdomen dusty brown with an abbreviated, narrow, median, longitudinal, yellow stripe. Wings sub-hyaline with brown picture.

Head:—Face covered with yellow pollen. Facial callosities black. Cheeks yellow around the oral margin, black on the sides. Frontal callosity dull black. Front above the callosity black, covered with grayish-green pollen. Ocellar area lustrous black, bearing three reddish brown ocelli. Antennæ slender, joint 1 dark yellow, joint 2 brown, furrowed, beset with black bristles, joint 3 sinuated at the base, black.

Thorax:—Lacking the usual alternating of longitudinal stripes. The mid-dorsum is greenish, the sides are shining brown. At the base of the thorax, just beneath the vertex, is a ring of deep green. Scutellum reddish yellow. Pleura yellow, clothed with pale yellow hair. Legs yellow, with dark front tarsi and basal tips of middle and hind tibiæ.

Wings brown at base and on the entire costal margin including the costal, sub-costal, and first basal cells. The infuscation widens beyond the stigma to form a broad apical spot covering the marginal, first submarginal and three-fourths of the second submarginal cells. Cross-band extends with its convex posterior border over the basal one-half of the first and second, and three-fourths of the third posterior marginal cells. The discal and fourth posterior marginal cells are brown. The hyaline triangle is very small. The second basal, the anal, axillary, and fifth posterior marginal cells are hyaline.

Abdomen:—The brown on tergites 1–3 is divided in the middle by a common longitudinal yellow spot. The sides of tergites 1–2 are sometimes faintly yellow. The other tergites are uniformly brown. Venter brown, with yellow sides on sternites 1–2.

Male. Similar to female. Infuscation extends over parts of second basal cell along the vein separating it from the first basal, and over the basal parts of the fifth posterior marginal cell.

Distribution: New York to Florida; Long Island to Ohio.

Chrysops maechus, O.-S.

(*Chrysops maechus*, Osten-Sacken, Memoirs Boston Society of Natural History, II: 347, 1876.)

Length 7–8.5 mm., antennæ 2–2.5 mm., wings 7.5–8.5 mm. long, 2.5–3 mm. wide.

Female. General color of thorax green with brown longitudinal stripes. Abdomen yellow with narrow brown stripes. Wings hyaline with broad brown anterior margin and apical spot.

Head:—Face covered with golden yellow pollen and yellow hair. Facial callosities and cheeks honey-yellow. Frontal callosity dull black with a brownish upper border. Ocellar area black, bearing three brown ocelli. Pollen above the frontal callosity grayish, vertex with short yellow hair. Antennal joint 1 yellow, 2 darker, both beset with black bristles. Joint 3 reddish at base, the rest and the terminal style black.

Thorax:—The narrow median brown line separates two broad greenish longitudinal stripes which cover most of the dorsum. These are bordered by glossy brown stripes. Sides greenish-yellow. Pleura yellow, separated from the dorsum by a brown stripe running from base of thorax to base of wing, clothed with yellow hair. Legs yellow, bases of the hind femora and all tarsi dark. Scutellum reddish-yellow with a greenish-brown base.

Wings with a brown anterior margin extending over the entire first basal cell. Second basal cell infuscated in the proximal one-quarter. The cross-band is triangular in shape, and extends from the stigma to the posterior margin of the wing across the basal one-third of the second and three-fourths of the third posterior marginal cell. The discal and the fourth posterior marginal cells are entirely brown. The fifth posterior marginal is cloudy along the veins. The apical spot is continuous with the anterior margin and fills the first and second submarginal cells and the first posterior marginal cell. The hyaline triangle is very small and limited to the posterior borders of second and third posterior marginal cells. Most of the second basal and fifth posterior marginal cells, the anal and axillary cells are hyaline.

Abdomen:—Tergite 1 yellow with a faint circular brown spot just beneath the scutellum. Tergite 2 yellow with a median pair of diverging brown stripes, and the rudiments of lateral stripes.

Tergites 3-4 each with two median and two lateral brown stripes, the median ones being broader than the lateral. Tergites 5-7 brown, with faint yellow markings on the anterior border of tergite 5. Venter yellow. Sternites 4-5 with black posterior margins, 6-7 black. Abdomen clothed with short yellow hair.

Male. Similar to female. The picture of the wing is more intensely brown and occupies a larger area than in the female. General tone of the thorax darker, although the pattern is the same as in the female.

Distribution:—New York to Georgia, Minnesota and Arkansas.

Chrysops striatus O.-S.

(*Chrysops striatus*, Osten-Sacken, Memoirs of the Boston Society of Natural History II: 391, 1875.)

Length 7-9 mm., antennæ 1.5-2.5 mm., wings 7.2-8.5 long, 2.3-3 mm. wide.

Female. Thorax with greenish and brown longitudinal stripes. Wings hyaline with brown anterior margin confluent with the apical spot.

Head:—Face covered with yellow pollen and yellow hair. Facial callosities brown, cheeks black. Frontal callosity lustrous black. Ocellar area black, bearing three brown ocelli. Pollen on front and vertex greenish-gray with pale yellow hair. Antennal joint 1 yellow, 2 darker on the outer surface, both beset with black bristles. Joint 3 reddish at the base, the rest and the short terminal style, black.

Thorax:—The narrow median brown line separates two broad greenish-gray longitudinal stripes, which are bordered by brown stripes. Sides light yellow. Pleura yellow, separated from the dorsum by a brown stripe. Legs reddish-yellow, front tarsi, bases of hind femora and the tarsi, dark. Scutellum bluish-black with reddish-yellow apex.

Wings brown on the anterior margin including the entire first basal cell. The apical spot fills the entire first and the terminal half of the second submarginal cells. The cross-band is nearly vertical in its posterior border, and covers the proximal half of the first posterior, one-third of the second posterior, one-half of the third posterior and the entire fourth posterior and discal

cells. The fifth posterior marginal cell is slightly clouded along the veins. The hyaline triangle wedges across the branching of the third longitudinal vein into the first submarginal cell, spreads over the apical parts of the first three posterior marginal cells and the basal two-thirds of the second submarginal cell. The second basal cell, except for a brown spot at the base, the anal, axillary and the fifth posterior cells, are hyaline.

Abdomen:—Tergite 1 reddish-yellow with two median black spots which are fused on the anterior border, just beneath the scutellum. Tergites 2-5 yellow, each with four black longitudinal stripes, which do not reach the posterior margins of the segments. Tergites 6-7 black with yellow posterior margins. Venter yellow on the first two sternites, the others with black median spots and lateral lines.

Male similar to female. The infuscation of the wings is more extensive, and involves the second basal cell and the fifth posterior marginal cell. The clear areas are rather cloudy and not hyaline as in the female.

Distribution:—Ontario and Quebec to Mexico; Long Island to Minnesota.

Synonym:—*vittatus* Bellardi, 1859.

Chrysops univittatus Macq.

(*Chrysops univittatus*, Macquart, Diptera Exotica, Supplement V: 36, 1855.)

Length 6-7.5 mm., antennæ 2-2.5 mm., wings 6.3-7.5 mm. long, 2-2.3 mm. wide.

Female. Thorax with alternating brown and green stripes. Abdomen with a narrow median longitudinal yellow stripe, enclosed by two brown stripes. Wings with a brown picture occupying most of the apical part.

Head:—Face covered with pale yellow pollen and delicate yellow hair. Facial callosities shining yellow with circular protuberances on the anterior border which are brownish. Cheeks yellow. Frontal callosity black. Ocellar area black, bearing three brown ocelli. Front and vertex clothed with greenish-gray pollen and gray hair. Antennal joint 1-2 reddish-yellow, beset with short hair. Joint 3 yellow at base, gradually darkening towards the terminal style which is black.

Thorax:—The middorsal brown narrow stripe separates between two wide greenish stripes, which in turn are followed by brown stripes. Sides green. Pleura green clothed with short yellow hair. Scutellum brown with a reddish-yellow apex. Legs yellow, front tarsi and tips of the middle and hind tarsi dark. Wings with a brown anterior border extending over the first basal cell. The apical spot covers the first and second submarginal cells except for a small clear area at the branching of the vein, and also invades the apex of the first posterior marginal cell. The cross-band extends in nearly a horizontal line towards the fourth posterior marginal cell which it fills completely, as well as the discal cell. Second basal cell, except for a brown spot at the base, the fifth posterior marginal, anal and axillary cells hyaline. The hyaline triangle wedges slightly across the point of the branching of the third longitudinal vein, and spreads over the middle portion of the first, and the apical parts of the second and third posterior marginal cells. A narrow brown streak interrupts the hyaline triangle in the region of the first posterior cell, connecting the brown base of the cell with its brown apex.

Abdomen:—Tergites 1-4 with a common median yellow stripe bordered by broad brown stripes. Sides yellow. The yellow median stripe broadest on the first two tergites, tapering posteriorly. Tergites 5-7 black, without any trace of yellow. Venter brown. Pubescence short, black, and yellow.

Male similar to female but darker in tone. The second basal mostly brown.

Distribution:—Ontario to Florida, Long Island to Illinois.

Synonym:—? *Chrysops fascipennis*, Macquart, 1934.

Chrysops vittatus Wied.

(*Chrysops vittatus*, Wiedemann, Diptera Exotica I: 106, 1821.)

Length 7-9 mm., antennæ 2-2.5 mm., wings 7-8.5 mm. long, 2-2.5 mm. wide.

Female. Thorax with alternating yellow and brown stripes clearly outlined. Abdomen reddish-yellow with four longitudinal rows of black stripes. Wings with a broad anterior brown margin and infurcated apex separated from the cross-band by a small hyaline triangle.

Head:—Face covered with golden-yellow pollen and pale yellow hair. Facial callosities and cheeks honey yellow. Frontal callosity yellow with a semicircular brown border. Ocellar area black, bearing three brown ocelli. Antennal joints 1–2 reddish-yellow with short black bristles and longer yellow hair. Joint 3 reddish at base, the rest and the terminal style, black. Front with yellow pollen and gray hair.

Thorax:—Middorsal brown stripe separates two wide yellow stripes with a greenish hue on their anterior one-third. These are bordered by lustrous brown stripes. Sides yellow with yellow hair. Pleuræ greenish-yellow, separated from the dorsum by a brown stripe. Legs reddish-yellow. Front tarsi and tips of all tarsi dark. Scutellum reddish-yellow.

Wings with a brown anterior margin extending over the first basal cell. Apical spot covers the first submarginal and two-thirds of the second submarginal cell. Cross-band extends irregularly toward the fourth posterior marginal cell, and fills the proximal half of the first, one-third of the second, obliquely one-half of the third and the whole fourth posterior marginal cells, except for a narrow clear margin. The discal cell and the fifth posterior marginal cells are brown except at the base. The base of the second basal cells and the tip of the anal cell are infuscated, the rest is hyaline. The hyaline triangle wedges across the branching of third longitudinal vein, and spreads over the apical parts of the first three posterior cells, and the proximal one-third of the second submarginal cell. A narrow streak of brown interrupts the hyaline triangle in the middle of the first posterior cell connecting the cross-band with the apical spot in that region.

Abdomen:—Tergite 1 yellow with two faint circular median spots. Tergite 2 yellow with two median and rudiments of two lateral black stripes. Tergites 3–4 yellow, each with four distinct black stripes. Tergite 5 brown with faint indications of division into separate stripes. Tergites 6–7 brown with light posterior borders. Venter reddish-yellow with lateral narrow black lines and brown posterior borders on sternites 2–5. The apical sternites brown. Pubescence short, yellow.

Male similar to female. Second basal cell of wing brown, ex-

cept at the very tip. Thorax darker in tone than in the female.

Distribution:—Quebec and Ontario to Florida; Long Island to Kansas.

Synonyms:—*Areolatus*, Walker, 1848.

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